Performance Testing Tools: A Comparative Study

Dr. Manju Kaushik[1], Pratibha Fageria[2]

[1]Associate Professor (Computer Science and Engineering),JECRC University Jaipur, India
[2]M.tech (Computer science), JECRC University Jaipur, India
Email: fageria1405@gmail.com

Abstract-

The objective of this research paper is to analyze the performance of some specific testing tools and compared in terms of their different performance parameters. Performance parameters results generated by these performance testing tools have been evaluated and analyzed. The same web site has been tested for performance under these performance testing tools then differences in results of various performance parameters like throughput, response time, number of hit pages, error rate, memory and CPU utilization etc. are obtained. The same website has been put under load test for a number of virtual users and results have been analyzed.

Keywords: Performance testing tools, Throughput, Response Time, Virtual Users, Load generation.

1. INTRODUCTION

Now days, various business critical applications are tested for performance before launching satisfy their customer needs. Performance testing is a non-functional type of testing to determine the speed, stability, reliability and scalability of the system. Various types of performance tests are done to check the system's behavior and to determine the part that performs poorly. Ignoring performance test means that your system is not fully tested, especially from the risk and operational profile perspectives. There are different types of performance testing: Stress test, Load test, Strength test. Performance testing tools is used to determine the time required performing a task by the system and it provides stability of system under different load conditions. Testing tools simulate multiple user access of web server. Through analysis of data tools, performance parameters of web server are obtained. Several issues have been observed related to tools when conducting performance testing such as tools compatibility with the software under test, tools installation, tools setup, tools flexibility in doing test both for client and server side. With the help of test tools, testers can create, manage and execute tests for a specific test environment for a particular application. The test results are compared with the expected results to evaluate the quality of the product. Different testing tools are used to test the load of server. Tools have many issues to conduct performance testing such as tools compatibility with system under test, tools installation, tools setup and flexibility in doing test both for client and server side. In this paper, three different performance testing tools are used for performance testing for same web site and results are generated for different performance parameters in different browsers. The research discussion has been organized into different sections. Section II discusses prior related works. In section III, overview of features of three tools that are used for comparison is given. In section IV, concludes the overall work.

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2. RELATED WORKS

Most previous work on performance testing tools comparison ignored different results reported by each tool. In the research paper "A Comparative Study of Performance Testing Tools" by Rina and Sanjay Tyagi [1], some specific performance testing tools are used for performance testing by using different performance parameters. NeoLoad, LoadUI and WAPT generate different parameters results in different browsers. In the research paper "Performance evaluation and comparison of Software Testing Tools" by Sneha Khoria and Pragati Upadhyay [2], some specific performance testing tools have been compared for their usability and effectiveness. WAPT and RANOXEX performance testing tools inferences, implications and results have been presented and discussed. Different attributes, their ability to compare the results, test cases documentation ability and regression testing performance ability have been compared. In the research paper "Web services testing tools: A Comparative Study" by Shariq Hussain, Zhaoshun Wang, Ibrahima Kalil Toure and Abdoulaye Diop [3], three popular open source web service testing tools have been compared in terms of features, usability, performance and software requirements. In "Web Application–A Study on Comparing Software Testing Tools" by Dr. S. M. Afroz, N. Elezabeth Rani and N. Indira Priyadarshini [4], Dart and Apollo software web tools have been compared in terms of their dynamic test generation ability. A survey has been presented on static and dynamic testing analysis. In the paper "Performance Testing: Analyzing Differences of Response Time between Performance Testing Tools" by Muhammad Dhiauddin Mohamed Suffiani, Fairul Rizal Fahrurazi [5], different performance testing tools response time have been compared and justification of these differences include architecture and simulation mechanism has been given. In the paper "Open Source & Commercial process and emulation of multiple concurrent users. Performance Testing Tools" by Vinod P [6], performance testing tools have been compared based on factors including accuracy, cost and other features. In the paper "Performance Testing Tool Comparison" by Smith[6], HP, Load Runner, Load Test, loadUI and Grinder performance testing tools have been compared in terms of cost, market place skill set, scalability, result reporting etc. In the paper "Stress, Load, Volume, Performance, Baseline Testing Tool Evaluation and Comparison" by VCAA [7], stress, load, volume, performance, benchmarking and base line testing tools have been compared in terms of all features and price. Testingrefeclections.com [8] concludes that accuracy of load and response time is something we need to evaluate against our particular application and not something to compare when determining the tool to use or buy.

In our research paper, differences in performance parameters resulting in different browsers of different performance testing tools have been analyzed.

3. OVERVIEW OF PERFORMANCE TESTING TOOLS

Performance tools are used for different types of performance testing including load test, stress test, volume test and endurance test. These tools are either open source or proprietary tools. For this research, three performance testing tools Neoload, WAPT and LoadUI, have been selected.

Neoload

Neoload [9] used for measuring and analyzing the performance of the website.

The performance and the end result can be evaluated by using this tool. This tool analyzes the performance of the web application by increasing the traffic to the website and determines the performance under heavy load. This tool provides all the features that are needed for load testing and to analyze the results. A large number of users are simulated simultaneously. It allows you to analyze both the user response time and Infrastructure's statistics (database, web server, network components etc). It performs testing more quickly, efficiently and frequently. This tool tests rich internet applications such as AJAX, FLEX&AIR, GWT, RTMP, and Java Serialization. This tool is compatible with operating systems like Microsoft Windows, Linux and Solaris.

WAPT

WAPT [9] provides load, stress and performance testing of web sites and web applications with web interface. It consists of the workplace component and multiple load agents that can be installed anywhere and managed remotely. This tool provides detailed information about the virtual users and its output to users during the load testing. This tool is considered to be the best cost effective tool for analyzing the performance of the web services. It uses WMI and SNMP interfaces to collect the performance information directly from each server and database. It provides custom java script code that provides dynamic request parameterization. It uses GUI approach for test creation and execution. This tool is having modules for ASP.NET testing, ADOBE FLASH tests and JSDN format testing. This tool is compatible with Microsoft Windows XP/2003/Vista /2008/Win7.

LoadUI –

LoadUI [9] is an open source testing tool, targeted mainly at web services. This allows creating, configuring and updating tests while the application is being tested. It also gives a visual Aid for the user with a drag and drop experience. The advanced analysis and report generating features allows examining the actual performance by pumping in new data even while the application is being tested. This tool is compatible with operating systems like Microsoft Windows, Linux.

4. RESULT AND DISCUSSION

These performance testing tools NeoLoad, WAPT and LoadUI generate different parameters results in different browsers. By using comparison result tables it concludes that WAPT takes less average response time than LoadUI and NeoLoad. Errors are zero in all browsers. Total hits are higher in WAPT than other two tools. CPU utilization is less than NeoLoad. In NeoLoad average response time is less, Average hits value is high and average throughput is higher than LoadUI in all browsers. NeoLoad is better than LoadUI. From this discussion it is found that WAPT performance testing tool is best in all these three tools.

5. CONCLUSION AND FUTURE WORK

In this paper performance parameters results of different performance testing tools NeoLoad, WAPT and LoadUI in different browsers have been analyzed. The same Web site has been tested for performance under these performance testing tools and performance results of different tools have been compared. These comparisons provide information to select the better tool for performance testing of web applications according to performance requirement. It is difficult to compare tools because many parameters values are not considers in all

tools. This research work can be extended to more experiments with more tools and different comparison parameters to provide more realistic results.

6. REFERENCES

1. Rina, Sanjay Tyagi "A Comparative Study of Performance Testing Tools" *International Journal of Advanced Research in Computer Science and Software Engineering (IJARCSSE),* **3(5)**, Pages 1300-1307, (2013).

2. Sneha Khoria, Pragati Upadhyay "Performance Evaluation and Comparison of Software Testing Tools" *VSRD International Journal of Computer Science and Information Technology,* **2(10),** Pages 801-808, (2012).

3. Shariq Hussain, Zhaoshun Wang, Ibrahima Kalil Toure and Abdoulaye Diop, "Web Service Testing Tools: A Comparative Study", *International Journal of Computer Science Issues (IJCSI)*, **10(1)**, Pages 641-647, (2013).

4. Dr. S. M. Afroz, N. Elezabeth Rani and N. Indira Priyadarshini, "Web Application– A Study on Comparing Software Testing Tools", *International Journal of Computer Science and Telecommunications*, **2(3)**, Pages 1-6 (2011).

5. Muhammad Dhiauddin Muhammad Suffian, Fairul Rizal Fahrurazi "Performance Testing: Analyzing Differences of Response Time between Performance Testing Tools" *International Conference on Computer & Information Science (ICCIS),* Malaysia, 919 (2012)

6. Vinod, P. (2008), Open Source & Commercial Performance Testing Tools [Online].Available: http://www.scribd.com/doc/2776593 9/Performance-Test-Tools-Comparison.

7. Kualitatem (2012), Comparison between HP, IBM and APACHE – Performance Testing Tools [Online].Avialable:http://www.kualit atem.com/comparison-between-performance-testing-tool/.

8. VCAA (2005), Stress, Load, Volume, Performance, Baseline Testing Tool Evaluation and comparison. [Online].Available:http://www.vcaa. com/tools/loadtesttoolsevaluationcha rt-023.pdf.

9. Barber, S. (2006). Choosing Performance Testing [Online].Testingreflections.com. Available: http://www.testingreflections.com/ Node/view/3939

10. **http://www.softwaretestinghelp.co m/performance-testing-tools-load-testing-tools/**